

Description

This invention relates to locking devices, and in particular to a locking device which, during use, is pressed into a locking position and can be released therefrom by means of a key. Such a device is particularly suitable for use in a vent handle locking mechanism.

Vents, such as windows, are often held closed by means of a latch which is swung into position by means of a handle rotatably mounted on the vent itself. The handle and latch rotate about a pivot secured to the vent, and the latch engages in a recess in, or simply abuts against, the frame of the vent which is solidly mounted in a wall or the like. To ensure that the handle cannot be rotated, thereby releasing the latch and allowing the vent to be opened, it is often desirable to be able to lock the handle in its closed position. A number of ways of achieving locking of the handle are known.

Some of the prior art arrangements involve the driving of a pin mounted on the handle into a recess in the handle support, thereby preventing rotation of the handle relative to the support. Such prior art locks are relatively complicated, since they require at least two inter-engaging parts which incorporate camming profiles to drive the pin into the recess. Further, a key is always needed to rotate the lock to drive the pin into, and withdraw the pin out from, the recess. Such handle locks are often manufactured from metal parts, and are therefore expensive.

Other prior art locking devices incorporate a stud, mounted on the handle support which is engaged by a shield integral with the handle rotated into position by means of a key. Once again, two metal parts are used, thereby making the device expensive to manufacture. Further, to lock the handle in position, it is necessary to introduce the key into the barrel of the lock.

Another prior art device is known from GB-A-2222850 which discloses a handle assembly incorporating a locking device as defined in the pre-characterising part of claim 1 herein.

The present invention aims to overcome the problems associated with the known prior art handle locking devices. With this in mind, a locking device according to the present invention is cheap to manufacture, requires very few parts and can be activated without the use of a key.

According to the present invention there is provided a locking device adapted to be pressed, during use, into a locking position and released therefrom by means of a key, comprising

a body portion, having an aperture therein for receiving a key during unlocking,

an active portion for effecting locking when the device is depressed and

a detent retaining the device in its locking position when depressed, characterised in that the detent is attached to the body portion by means of a resilient web,

and in that interaction of the key with the locking device bends the resilient web, thereby deactivating the detent and enabling the device to be biased back into its unlocked position.

According to another aspect of the present invention there is provided a vent locking mechanism according to claim 11.

Preferably the locking device further comprises means for receiving a biasing means which, when the detent is de-activated, urges the device back into its unlocked position.

The receiving means may be a spindle formed integrally with the body portion of the device for receiving a helical spring. In such an embodiment, the helical spring is preferably in compression when the locking device is in its locking position.

The detent may include a first flange extending in a direction substantially perpendicular to the direction of motion, during use, of the locking device.

In a preferred embodiment of the invention, the active portion and the detent are formed integrally.

The locking device preferably further comprises means for dictating the unlocked position of the device. Such a dictating means may include a second flange extending in a direction substantially perpendicular to the direction of motion, during use, of the device. The second flange, if included, preferably extends in substantially the opposite direction to the first flange.

The dictating means is preferably attached via a resilient support to the body portion.

To facilitate manufacture and use of the locking device, the body portion is preferably substantially cylindrical.

The whole locking device may be manufactured as a one-piece plastic moulding. If this is the case, the cost of manufacture of the device is substantially less than that of each of the known prior art devices mentioned above. Hence, this is extremely important for commercial reasons.

As will be appreciated, a locking device according to the present invention is particularly suitable for use in a locking mechanism for a vent, such as a window. A vent locking mechanism of this kind preferably comprises a handle, including a locking device according to the present invention, and a base upon which the handle is rotatably mounted, wherein the locking device engages the base when in its locking position, thereby preventing rotation of the handle, and disengages from the base in its unlocked position to allow opening of the vent.

When the locking device of such a mechanism is depressed, the active portion preferably enters a recess in the base and the detent interacts with a shaped part of the handle.

In a particularly preferred form of the aforementioned vent locking mechanism, the locking device is accommodated within a recess in the handle, together with a biasing means for urging the locking device into its unlocked position. The biasing means may be a helical spring or some other suitable means.

As will be appreciated a locking device according to the present invention may be used with a cockspur-type handle, a handle of an espagnolette bolt system, or any other suitable type of handle.

A specific embodiment of the present invention is now described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a schematic partly-sectioned side elevation of a vent handle locking mechanism incorporating a locking device, according to the present invention, in its unlocked position;

Figure 2 is a schematic side elevation of part of Figure 1, except that the locking device is in its locking position; and

Figure 3 is a plan view of the locking device shown in Figures 1 and 2, together with a key for releasing the locking device from its locking position.

With reference to the drawings, a vent locking mechanism 1 comprises a handle 3 rotatably mounted, by means of a large rivet or pin 5, on a handle base 7. The handle 3 includes a sideways extension or latch (not shown) which, when the handle is in its closed position, is able to engage a recess in, or abut against, the solidly mounted frame of the vent. Hence, it is possible to hold the vent closed without locking the handle 3. However, for additional security, it is often preferred to lock the handle 3 in position when the vent has been closed. The locking device according to the present invention enables this to be achieved in a quick and easy manner.

The handle 3 includes a recess 9 which, when the handle 3 is in its closed position, overlays an opening 11 in the handle base 7. The recess 9 is adapted to receive a locking device 13 according to the present invention.

The locking device 13 comprises a body portion 15 having an aperture 17 therein for receiving a key 19 during unlocking. A first flange 21 and an active portion 23, which engages the opening 11 when the locking device 13 is in its locking position, form a lower portion 24 of the locking device 13. This lower portion 24 is attached to the main body 15 of the locking device 13 by means of a resilient web 25. The aperture 17 in the body portion 15 extends from the top of the body portion 15 to a region

adjacent the resilient web 25. A spindle 27, formed integrally with the body portion 15 of the locking device, extends substantially parallel to the direction of motion, during use, of the locking device 13. This spindle 27 receives a helical spring 29 within the recess 9 of the handle 3. The helical spring 29 sits on a shaped shoulder 31 within the recess 9 and biases the locking device 13 into its unlocked position (as shown in figure 1).

The locking device 13 further includes a second flange 33 attached via a resilient support 35 to the body portion 15. During use, the second flange 33 engages a corner 37 formed in a wall of the recess 9, thereby dictating the unlocked position of the locking device 13.

As can be seen from figure 2 of the drawings, when the locking device 13 has been depressed from its unlocked position shown in figure 1, the first flange 21, or detent, bears against the underside of a projection 39 extending out from the wall of the recess 9. The contact between the detent 21 and the projection 39 ensures that the locking device 13 remains in its locking position with the active portion 23 within the opening 11. This arrangement prevents rotation of the handle 3 about the pivot 5.

To release the locking device 13, it is simply necessary to disengage the detent 21 from the projection 39. This is achieved by inserting a butterfly end 41 of the key 19 into the aperture 17 of the locking device 13. The butterfly end 41 of the key 19 is then rotated, by means of the head 43 of the key 19, when the butterfly end 41 abuts the top of the lower portion 24 of the locking device 13. Rotation of the butterfly end 41 causes the resilient web 25 to bend (as shown in chain line in figure 2), thereby separating the detent 21 and projection 39. As soon as disengagement occurs, the helical spring 29 forces the locking device 13 upwards into its unlocked position, as shown in figure 1. The key 19 can then be removed from the aperture 17 and the resilient web 25 reverts back to its relaxed position.

If the vent handle is to be locked again, the locking device 13 needs only to be depressed, so that the detent 21 slides past the projection 39 and engages the underside thereof. This is facilitated by the angled bearing surfaces of the detent 21 and projection 39, as shown in the drawings.

As will be appreciated from the foregoing, a locking device according to the invention is simple to use and cheap to manufacture, but sufficiently efficient and reliable to satisfy its functional requirements. With specific reference to the cost of manufacture, there is a fundamental saving in this regard, because the locking device 13 can be made as a one-piece moulding from plastics materials.



Claims

1. A locking device (13) adapted to be pressed, during use, into a locking position and released therefrom by means of a key (19), comprising
 - a body portion (15), having an aperture (17) therein for receiving a key (19) during unlocking,
 - an active portion (23) for effecting locking when the device (13) is depressed and
 - a detent (21) retaining the device (13) in its locking position when depressed,
 - characterised in that the detent (21) is attached to the body portion (15) by means of a resilient web (25),
 - and in that interaction of the key (19) with the locking device (13) bends the resilient web (25), thereby de-activating the detent (21) and enabling the device (13) to be biased back into its unlocked position.
2. A locking device as claimed in claim 1, further comprising means (27) for receiving a biasing means (29) which, when the detent (21) is de-activated, urges the device (13) back into its unlocked position.
3. A locking device as claimed in claim 2, wherein the receiving means (27) is a spindle formed integrally with the body portion (15) for receiving a helical spring (29).
4. A locking device as claimed in any preceding claim, wherein the detent (21) includes a first flange extending in a direction substantially perpendicular to the direction of motion, during use, of the device.
5. A locking device as claimed in any preceding claim, wherein the active portion (23) and the detent (21) are formed integrally.
6. A locking device as claimed in any preceding claim, further comprising means (23) for dictating the unlocked position of the device (13).
7. A locking device as claimed in claim 6, wherein the dictating means (33) includes a second flange extending in a direction substantially perpendicular to the direction of motion, during use, of the device.
8. A locking device as claimed in claim 7, wherein the dictating means (33) is attached via a resilient support (35) to the body portion (15).
9. A locking device as claimed in any preceding claim, wherein the body portion (15) is substantially cylindrical.
10. A locking device as claimed in any preceding claim, wherein the whole device (13) is manufactured as a one-piece plastics moulding.
11. A vent locking mechanism (1) comprising a handle (3), a base (7) upon which the handle (3) is rotatably mounted and a locking device (13), the locking device (13) being adapted to the pressed, during use, into a locking position engaging the base (7), thereby preventing rotation of the handle (3), and released therefrom by means of a key (19), the locking device (13) comprising
 - a body portion (15), having an aperture (17) therein for receiving a key (19) during unlocking,
 - an active portion (23) for effecting locking when the device (13) is depressed and
 - a detent (21) retaining the device (13) in its locking position when depressed,
 - characterised in that the detent (21) is attached to the body portion (15) by means of a resilient web (25),
 - and in that interaction of the key (19) with the locking device (13) bends the resilient web (25), thereby de-activating the detent (21) and enabling the device (13) to be biased back into its unlocked position.
12. A vent locking mechanism as claimed in claim 11, wherein, when the locking device (13) is depressed, the active portion (23) enters a recess in the base (7) and the detent (21) interacts with a shaped part of the handle (3).
13. A vent locking mechanism as claimed in claim 11 or claim 12, wherein the locking device (13) is accommodated within a recess (9) in the handle (3), together with a biasing means (29) for urging the locking device into its unlocked position.

Patentansprüche

1. Verschlussvorrichtung (13) welche angepaßt ist, während der Benutzung in eine Verschlussposition gedrückt und mittels eines Schlüssels (19) daraus gelöst zu werden, welche umfaßt einen Körperabschnitt (15) mit einer Öffnung (17) darin zum Aufnehmen eines Schlüssels (19) während des Aufschließens, einen aktiven Abschnitt (23) zum Ausführen des Verschließens wenn die Einrichtung (13) gedrückt wird,



- und eine Arretierung (21), die die Einrichtung (13) in ihrer verschlossenen Position wenn gedrückt hält, dadurch gekennzeichnet, daß die Arretierung (21) an dem Körperabschnitt (15) mittels eines elastischen Steges (25) befestigt ist, und daß eine Wechselwirkung des Schlüssels (19) mit der Verschlusseinrichtung (13) den elastischen Steg (25) biegt, wodurch die Arretierung (21) deaktiviert und die Einrichtung (13) zurück in ihre unverschlossene Position vorgespannt wird.
2. Verschlusseinrichtung nach Anspruch 1, welche des weiteren umfaßt Einrichtungen (27) zum Aufnehmen von einer Vorspanneinrichtung (29), welche wenn die Arretierung (21) deaktiviert ist, die Einrichtung (13) zurück in ihre unverschlossene Position zwingt.
3. Verschlusseinrichtung nach Anspruch 2, wobei die Aufnahmeeinrichtung (27) eine einstückig mit dem Körperabschnitt (15) gebildete Spindel ist, zum Aufnehmen einer Schraubenfeder (29).
4. Verschlusseinrichtung nach einem der vorangehenden Ansprüche, wobei die Arretierung (21) umfaßt einen ersten Flansch, der sich während dem Betrieb in einer Richtung im wesentlichen senkrecht zu der Richtung der Bewegung der Einrichtung erstreckt.
5. Verschlusseinrichtung nach einem der vorangehenden Ansprüche, wobei der aktive Abschnitt (23) und die Arretierung (21) einstückig gebildet sind.
6. Verschlusseinrichtung nach einem der vorangehenden Ansprüche, welche des weiteren umfaßt Einrichtungen (23) zum Bestimmen der unverschlossenen Position der Einrichtung (13).
7. Verschlusseinrichtung nach Anspruch 6, wobei die Bestimmungseinrichtungen (33) einen zweiten Flansch umfassen, der sich während der Benutzung in einer Richtung im wesentlichen senkrecht zu der Richtung der Bewegung der Einrichtung erstreckt.
8. Verschlusseinrichtung nach Anspruch 7, wobei die Bestimmungseinrichtung (33) an dem Körperabschnitt (15) durch eine elastische Halterung (35) befestigt ist.
9. Verschlusseinrichtung nach einem der vorangehenden Ansprüche, wobei der Körperabschnitt (15) im wesentlichen zylindrisch ist.
10. Verschlusseinrichtung nach einem der vorangehenden Ansprüche, wobei die gesamte Einrichtung (13) hergestellt ist als ein Einstück-Kunststoffguß.
11. Lüftungsflügelverschlußmechanismus (1), welcher umfaßt einen Griff (3), eine Basis (7), auf welcher der Griff (3) drehbar befestigt ist und eine Verschlusseinrichtung (13), wobei die Verschlusseinrichtung (13) angepaßt ist während dem Gebrauch in eine mit der Basis (7) eingreifende Verschußposition gedrückt zu werden, wodurch eine Drehung des Griffes (3) verhindert wird, und daraus ausgelöst zu werden, mittels eines Schlüssels (19), wobei die Verschlusseinrichtung (13) umfaßt einen Körperabschnitt (15), der darin eine Öffnung (17) hat zum Aufnehmen eines Schlüssels (19) während des Aufschließens, einen aktiven Abschnitt (23) zum Ausführen des Verschließens, wenn die Einrichtung (13) gedrückt wird, und eine Arretierung (21), die die Einrichtung (13) in ihrer verschlossenen Position, wenn gedrückt hält, dadurch gekennzeichnet, daß die Arretierung (21) an dem Körperabschnitt (15) mittels eines elastischen Steges (25) befestigt ist, und daß ein Wechselwirken des Schlüssels (19) mit der Verschlusseinrichtung (13) den elastischen Steg (25) biegt, wodurch die Arretierung (21) deaktiviert und die Einrichtung (13) zurück in ihre unverschlossene Position vorgespannt wird.
12. Lüftungsflügelverschlußmechanismus nach Anspruch 11, wobei wenn die Verschlusseinrichtung (13) gedrückt ist, der aktive Abschnitt (23) in eine Vertiefung in der Basis (7) eintritt und die Arretierung (21) mit einem geformten Teil des Griffes (3) wechselwirkt.
13. Lüftungsflügelverschlußmechanismus nach Anspruch 11 oder 12, wobei die Verschlusseinrichtung (13) in eine Vertiefung (9) in dem Griff (3) aufgenommen ist zusammen mit einer Vorspanneinrichtung (29) zum Zwingen der Verschlusseinrichtung in ihre unverschlossene Position.

Revendications

1. Dispositif de verrouillage (13) adapté pour être enfoncé, lors de l'utilisation, dans une position de verrouillage et libéré de celle-ci au moyen d'une clé (19), comportant



- une partie de corps (15), ayant une ouverture (17) destinée à recevoir une clé (19) pendant le déverrouillage,
- une partie active (23) destinée à effectuer le verrouillage lorsque le dispositif (13) est enfoncé et
- un cliquet (21) retenant le dispositif (13) dans sa position de verrouillage lorsqu'il est enfoncé,
- caractérisé en ce que le cliquet (21) est fixé à la partie de corps (15) au moyen d'une bande élastique (25),
- et en ce que l'interaction de la clé (19) avec le dispositif de verrouillage (13) fait fléchir la bande élastique (25), désactivant ainsi le cliquet (21) et permettant au dispositif (13) d'être rappelé en arrière dans sa position déverrouillée.
2. Dispositif de verrouillage selon la revendication 1, comportant en outre des moyens (27) destinés à recevoir des moyens de rappel (29) qui, lorsque le cliquet (21) est désactivé, repousse le dispositif (13) en arrière dans sa position déverrouillée.
 3. Dispositif de verrouillage selon la revendication 2, dans lequel les moyens de réception (27) sont constitués par une broche formée d'un seul tenant avec la partie de corps (15) afin de recevoir un ressort hélicoïdal (29).
 4. Dispositif de verrouillage selon l'une quelconque des revendications précédentes, dans lequel le cliquet (21) comprend un premier rebord s'étendant dans une direction sensiblement perpendiculaire à la direction de déplacement, pendant l'utilisation, du dispositif.
 5. Dispositif de verrouillage selon l'une quelconque des revendications précédentes, dans lequel la partie active (23) et le cliquet (21) sont formés d'un seul tenant.
 6. Dispositif de verrouillage selon l'une quelconque des revendications précédentes, comportant en outre des moyens (33) pour déterminer la position déverrouillée du dispositif (13).
 7. Dispositif de verrouillage selon la revendication 6, dans lequel les moyens de détermination (33) comprennent un deuxième rebord s'étendant dans une direction sensiblement perpendiculaire à la direction de déplacement, pendant l'utilisation, du dispositif.
 8. Dispositif de verrouillage selon la revendication 7, dans lequel les moyens de détermination
 - (33) sont fixés à la partie de corps (15) par l'intermédiaire d'un support élastique (35).
 9. Dispositif de verrouillage selon l'une quelconque des revendications précédentes, dans lequel la partie de corps (15) est sensiblement cylindrique.
 10. Dispositif de verrouillage selon l'une quelconque des revendications précédentes, dans lequel le dispositif (13) complet est fabriqué par un moulage en une seule pièce de matière plastique.
 11. Mécanisme de verrouillage de vantail (1) comportant une poignée (3), une base (7) sur laquelle la poignée (3) est montée à rotation et un dispositif de verrouillage (13), le dispositif de verrouillage (13) étant adapté pour être enfoncé, lors de l'utilisation, dans une position de verrouillage venant en prise avec la base (7), empêchant ainsi toute rotation de la poignée (3), et être libéré de cette position au moyen d'une clé (19), le dispositif de verrouillage (13) comportant

une partie de corps (15), ayant une ouverture (17) destinée à recevoir une clé (19) pendant le déverrouillage,

une partie active (23) destinée à effectuer le verrouillage lorsque le dispositif (13) est enfoncé et

un cliquet (21) retenant le dispositif (13) dans sa position de verrouillage lorsqu'il est enfoncé,

caractérisé en ce que le cliquet (21) est fixé à la partie de corps (15) au moyen d'une bande élastique (25),

et en ce que l'interaction de la clé (19) avec le dispositif de verrouillage (13) fait fléchir la bande élastique (25), désactivant ainsi le cliquet (21) et permettant au dispositif (13) d'être rappelé en arrière dans sa position déverrouillée.
 12. Mécanisme de verrouillage de vantail selon la revendication 11, dans lequel, lorsque le dispositif de verrouillage (13) est enfoncé, la partie active (23) pénètre dans un renfoncement ménagé dans la base (7) et le cliquet (21) interagit avec une partie profilée de la poignée (3).
 13. Mécanisme de verrouillage de vantail selon la revendication 11 ou 12, dans lequel le dispositif de verrouillage (13) est reçu dans un renfoncement (9) dans la poignée (3), avec des moyens de rappel (29) destinés à repousser le dispositif de verrouillage dans sa position déverrouillée.